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10/730,524

12/08/2003

Hong Huynh

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EXAMINER

HOFFBERG, ROBERT JOSEPH

ART UNIT

PAPER NUMBER

2835

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/730,524

Applicant(s)

HUYNH ET AL.

Examiner

Robert J. Hoffberg

Art Unit

2835



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 March 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 and 13-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 13-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Detailed Action***

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, 13-15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prince et al. (US 6,208,517) in view of Smithers (US 5,640,305).

With respect to Claim 1, Prince et al. teaches a circuit board module, comprising: a circuit board having surface mount pads; a circuit board component (Fig. 2, #108) mounted to the circuit board (Fig. 5, #106); and a heat sink assembly including: a first clip holder (Fig. 5A, #130 mounted on left side of Fig. 2, #106, Col. 4, lines 3-5) and a second clip holder (Fig. 5A, #130 mounted on right side of Fig. 2, #106, Col. 4, lines 3-5), each clip holder being mounted to respective surface mount pads (Col. 4, line 5) of the circuit board using a surface mount technology soldering process, and a clip having a first portion (Fig. 2, #104, left side) configured to fasten to the first clip holder, a second portion (Fig. 2, #104, right side) configured to fasten to the second clip holder, and a third portion (Fig. 2, #103 and 116) coupled to the first and second portions, the third portion being configured to position the heat sink adjacent (see Fig. 2) the circuit board component when the first and second portions are respectively fastened to the first and second clip holders. The device of Prince et al. is integral with the heat sink.

Prince et al. fails to teach a separate heat sink component. Smithers teaches a clip (Fig. 5, #20) to fasten a heat sink (Fig. 5, #21) to a circuit board component (Fig. 5, #22) mounted on a circuit board (Fig. 5, #18) using clip holders (Fig. 5, #10). It is obvious to one of ordinary skill in the art at the time of the invention was made to modify the circuit board module of Prince et al. with that of Smithers to have a separate heat sink component retained to the component by a clip. Separation of an integral part into components has been held to be obvious one of ordinary skill in the art. *In re Dulberg*, 289 F.2d 522, 523, 129 USPQ 348, 349 (CCPA 1961).

With respect to Claim 3, Prince et al. teaches a heat sink assembly, comprising: a first clip holder (Fig. 5A, #130 mounted on left side of Fig. 2, #106, Col. 4, lines 3-5) and a second clip holder (Fig. 5A, #130 mounted on right side of Fig. 2, #106, Col. 4, lines 3-5), each clip holder being configured to mount to surface mount pads (Col. 4, line 5) of a circuit board (Fig. 5, #106) using a surface mount technology soldering process; and a clip having a first portion (Fig. 2, #104, left side) configured to fasten to the first clip holder, a second portion (Fig. 2, #104, right side) configured to fasten to the second clip holder, and a third portion (Fig. 2, #103 and 116) coupled to the first and second portions, the third portion being configured to position the heat sink adjacent (see Fig. 2) a circuit board component (Fig. 2, #108) on the circuit board when the first and second clip holders are mounted to the surface mount pads of the circuit board and when the first and second portions are respectively fastened to the first and second clip holders. Prince et al. fails to show a separate heat sink component. Smithers teaches a clip (Fig. 5, #20) to fasten a heat sink (Fig. 5, #21) to a circuit board component (Fig.

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5, #22) mounted on a circuit board (Fig. 5, #18) using clip holders (Fig. 5, #10). It is obvious to one of ordinary skill in the art at the time of the invention was made to modify the circuit board module of Prince et al. with that of Smithers to have a separate heat sink component retained to the component by a clip.

Regarding method claims 13 and 15, the method steps recited in the claims are inherently necessitated by the device structure as taught by Prince et al., in view of Smithers as recited above in the rejection to claims 1 and 3.

With respect to Claim 14, Prince et al. further teaches wherein the second clip holder (Fig. 5A, #130 mounted on right side of Fig. 2, #106, Col. 4, lines 3-5) defines a cavity (see Fig. 5A) which extends in a direction that is substantially parallel to a plane of the circuit board (Fig. 5A, #106); wherein the method further comprises: after the first end (Fig. 2, #104, left side) of the clip is fastened to the first clip holder (Fig. 5A, #130 mounted on left side of Fig. 2, #106, Col. 4, lines 3-5), bending (Col. 4, line 7, inward) the clip to align the second end (Fig. 2, #104, right side) of the clip with the cavity defined by the second clip holder.

With respect to Claim 17, Prince et al. teaches a heat sink assembly, comprising: surface mounting means (Fig. 5A, #130 mounted on Fig. 2, #106, Col. 4, lines 3-5) for surface mounting to surface mount pads of a circuit board using a surface mount technology soldering process (Col. 4, line 5), and a clip (Fig. 2, #103, #104 and #116) having a first portion (Fig. 2, #104, left side) configured to fasten to the surface mounting means, a second portion (Fig. 2, #104, right side) configured to fasten to the surface mounting means, and a third portion (Fig. 2, #103 and #116) coupled to the first

and second portions, the third portion being configured to position (see Fig. 2) the heat sink adjacent a circuit board component (Fig. 2, #108) on the circuit board (Fig. 2, #106) when the surface mounting means mounts to the surface mount pads of the circuit board and when the first and second portions are fastened to the surface mounting means. Prince et al. fails to show a separate heat sink component. Smithers teaches a clip (Fig. 5, #20) to fasten a heat sink (Fig. 5, #21) to a circuit board component (Fig. 5, #22) mounted on a circuit board (Fig. 5, #18) using clip holders (Fig. 5, #10). It is obvious to one of ordinary skill in the art at the time of the invention was made to modify the circuit board module of Prince et al. with that of Smithers to have a separate heat sink component retained to the component by a clip.

3. Claims 2, 4, 5, 10, 12, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prince et al. (US 6,208,517) in view of Smithers (US 5,640,305) as applied to the above claims, in view of Fukui (US 5,270,492).

With respect to Claims 2 and 4, Prince et al. further teaches wherein each clip holder is elongated (see Fig. 5A) in shape and includes (i) a first surface mount contact at first end (Fig 2, #112, left side, Col. 3, lines 64-65, alternate #130) and (ii) a second surface mount contact at a second end (Fig 2, #112, right side, Col. 3, lines 64-65, alternate #130) opposite the first end. Prince et al. fails to teach the apertures which are substantially perpendicular to the plane. Fukui teaches wherein the surface mount contacts (Fig. 1, #2) of each clip holder define apertures (Fig. 1, #6) which are substantially perpendicular to a plane of the circuit board. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify heat

sink clip of Prince et al. in view of Smithers with that of Fukui to incorporate apertures in the clip holders to improve solderability.

With respect to Claim 5, Prince et al. further teaches wherein the surface mount contacts of each clip holder define a plane which is substantially parallel (see Fig. 5A) to the circuit board when that clip holder mounts to the surface mount pads of the circuit board. Prince et al. fails to teach the apertures which are substantially perpendicular to the plane. Fukui teaches wherein the surface mount contacts (Fig. 1, #2) of each clip holder further define apertures (Fig. 1, #6) which are substantially perpendicular (see Fig. 1) to the plane. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify heat sink clip of Prince et al. in view of Smithers with that of Fukui to incorporate apertures in the clip holders to improve solderability.

With respect to Claim 18, Prince et al. in view of Smithers further teach wherein the surface mounting means include a set of clip holders (Prince et al., Fig. 5A, #130), each clip holder being elongated in shape and including (i) a first surface mount contact (Fig. 5A, #132, left side) at a first end and (ii) a second surface mount contact (Prince et al., Fig. 5A, #132, right side) at a second end opposite the first end. They do not teach a means for percolating gas therethrough. Fukui teaches wherein each surface mount contact (Fig. 1, #2) including means for percolating gas (Col.2, lines 31-33) therethrough. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify heat sink clip of Prince et al. in view of Smithers with that of Fukui to incorporate apertures in the clip holders to improve solderability.

With respect to Claim 20, Prince et al., in view of Smithers, in further view of Fukui teaches the heat sink assembly of claim 18. Smithers further teaches wherein each clip holder further includes: means for electrically connecting (Col. 2, line 32, wire spring) the clip (Fig. 5, #20) to the first and second surface mount contacts (Fig. 5, #10) of that clip holder. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify heat sink clip of Prince et al. in view of Smithers with that of Fukui to ground the circuit board component to the circuit board to provide an electromagnetic interference shielding.

4. Claims 6-8, 19 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prince et al. (US 6,208,517), in view of Smithers (US 5,640,305) and in further view of Fukui (US 5,270,492) as applied to the above claims, in view of Kawabe (US 5,786,989).

With respect to Claim 6, Prince et al., in view of Smithers, in further view of Fukui teaches the heat sink assembly of the above claims. They do not teach the nonconductive body. Kawabe teaches wherein each clip holder further includes: a non-conductive (Col. 3, line 10) body portion (Fig. 7C, #6a) interconnected between the first (Fig. 7C, #6b left side) and second (Fig. 7C, #6b right side) surface mount contacts of that clip holder (Fig. 7C, #6), the non-conductive body portion defining a surface (Fig. 7C, #6a top) to interface with automated pick and place equipment. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify heat sink clip holder of Prince et al. in view of Smithers with that of Kawabe to provide a flat surface to automate the assembly process.



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With respect to Claim 7 and 21, Prince et al. in view of Smithers and in further view of Fukui teach the heat sink assembly of the above claims. They fail to teach the non-conductive body portion with an interconnecting conductive portion. Kawabe teaches the non-conductive (Col. 5, line 10) body portion (Fig. 7C, #6a) of each clip holder (Fig. 6C, #6) defines a cavity (Fig. 7C, #6c) for fastening with the clip, the cavity extending in a direction that is substantially parallel (see Fig. 7C) to the plane. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the method of Prince et al. in view of Smithers and further in view of Fukui with that of Kawabe to insulate the heat sink clip from the first and second surface mount areas. With respect to Claim 8 and 22, Kawabe teaches in another embodiment that each clip holder further includes: an interconnecting conductive portion (Fig. 3, #6d) which electrically interconnects the first and second surface mount contacts of that clip holder, and wherein part of the interconnecting conductive portion is exposed (see Fig. 3) within the cavity defined by the non-conductive body portion of that clip holder. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the method of Prince et al. in view of Smithers further in view of Fukui and further in view of Kawabe to provide an electrically conductive path within the body cavity to ground the heat sink to the printed circuit board to minimize EMI.

With respect to Claim 19, Prince et al., in view of Smithers, in further view of Fukui teaches the heat sink assembly of claim 18. They do not teach a means for interfacing with automated pick and place equipment. Kawabe et al. teaches wherein each clip holder further includes: interfacing means (Fig. 7C, #6a top) for interfacing

with automated pick and place equipment. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify heat sink clip of Prince et al., in view of Smithers, in further view of Fukui with that of Kawabe to automate the assembly process.

5. Claims 9 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabe (US 5,786,989) as applied to the above claims, in view of Fukui (US 5,270,492).

With respect to Claim 9, Kawabe teaches a heat sink clip holder (Fig. 7C, #6), comprising: a first surface mount contact (Fig. 7C, #6b left side) configured to mount to surface mount pads (Fig. 7A, #1c) of a circuit board (Fig. 7A, #1) using a surface mount technology soldering process (Col. 3, line 45), the first surface mount contact being disposed at a first end (Fig. 7C, #6 left side) of the heat sink clip holder; a second surface mount contact (Fig. 7C, #6b right side) configured to mount to other surface mount pads of the circuit board using the surface mount technology soldering process, the second surface mount contact (Fig. 7C, #6 right) being disposed at a second end of the heat sink clip holder which is opposite the first end; and a body portion (Fig. 7C, #6a) interconnected between the first surface mount contact and the second surface mount contact, the body portion being configured to fasten (Fig. 7C, #6c) with a heat sink clip; wherein the clip holder is elongated in shape (see Fig. 7C) and includes (i) a first surface mount contact (Fig. 7C, #6b left side) at a first end and (ii) a second surface mount contact at a second end (Fig. 7C, #6b right side) opposite the first end: wherein the surface mount contacts of the clip holder define a plane which is substantially

parallel (see Fig. 7A) to the circuit board; when that clip holder mounts to the surface mount pads of the circuit board; wherein the clip holder further comprises: a non-conductive (Col. 5, line 10) body portion interconnected between the first and second surface mount contacts of the clip holder, the non-conductive body portion defining a surface (Fig. 7C, #6a top) to interface with automated pick and place equipment; and wherein the non-conductive body portion of the clip holder defines a cavity (Fig. 7C, #6c) for fastening with the clip, the cavity extending in a direction that is substantially parallel (see Fig. 7C) to the plane. Kawabe fails to teach that the surface mount contacts of the clip holder further define apertures which are substantially perpendicular to the plane. Fukui teaches surface mount contacts (Fig. 1, #2) of the clip holder further define apertures (Fig. 1, #6) which are substantially perpendicular (see Fig. 1) to the plane. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify heat sink clip of Kawabe with that of Fukui to incorporate apertures in the clip holders to improve solderability.

With respect to Claim 23, Kawabe in view of Fukui fail to teach an in interconnecting conductive portion within the cavity defined by the non-conductive body portion. Kawabe teaches in another embodiment that an interconnecting conductive portion (Fig. 3, #6d) which electrically interconnects the first and second surface mount contacts of that clip holder, and wherein pad of the interconnecting conductive portion is exposed (see Fig. 3) within the cavity defined by the non-conductive body portion of that clip holder. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the method of Kawabe in view of Fukui to provide an

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electrically conductive path within the body cavity to ground the heat sink to the printed circuit board to minimize EMI.

6. Claims 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prince et al. (US 6,208,517) in view of Smithers (US 5,640,305), in further view of Degani et al. (US 5,346,118), in further view of Tanaka et al. (US 5,249,977) in further view of Fukui (US 5,270,492).

With respect to Claim 16, Prince et al. in view of Smithers further teaches wherein mounting includes: disposing the first and second clip holders (Prince et al., Fig. 2, #104) over the surface mount pads (Prince et al., Col. 4, line 5) of the circuit board (Prince et al., Fig. 5, #106). Degani et al. teaches the surface mount technology process of circuit board in contact with printed solder paste (Col. 3, line 43); and applying heat to melt (Col. 3, line 44) the printed solder paste and activate flux (Col. 3, line 46) within the printed solder paste (Col. 3, line 45). Tanaka et al. further teaches using automated pick and place equipment (Col. 1, line 18). Fukui teaches percolate gas (Col. 2, line 32) through apertures (Fig. 1, #6) defined by the first and second clip holders (Fig. 1, #2). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the method of Prince et al. in view of Smithers with that of Degani et al., in further view of Tanaka et al. and in further view of Fukui to assemble using an automated surface mount technology process and configure for improved solderability.

7. Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prince et al. (US 6,208,517) in view of Smithers (US 5,640,305) as applied to the above claims, in view of Kawabe (US 5,786,989) and further in view of Fukui (US 5,270,492).

With respect to Claims 24 and 26, Prince et al. in view of Smithers teaches the method of claim 13 above. They fail to teach the clip holder with a non-conductive body portion and the surface mount contacts of the clip holder further define apertures which are substantially perpendicular to the plane. Kawabe teaches each clip holder (Fig. 7C, #6) includes: a first surface mount contact (Fig. 7C, #6b left side) configured to mount to surface mount pads (Fig. 7A, #1c) of the circuit board using a surface mount technology soldering process (Col. 3, line 45), the first surface mount contact being disposed at a first end of the clip holder; a second surface mount contact (Fig. 7C, #6b right side) configured to mount to other surface mount pads of the circuit board using the surface mount technology soldering process (Col. 3, line 45), the second surface mount contact being disposed at a second end of the clip holder which is opposite (see Fig. 7c) the first end; and a body portion (Fig. 7c. #6a) interconnected between the first surface mount contact and the second surface mount contact, the body portion being configured to fasten (Fig. 7c, #6c) with the clip; wherein the clip holder is elongated in shape (see Fig. 7c) and includes (i) a first surface mount contact (Fig. 7C, #6b left side) at a first end and (ii) a second surface mount contact (Fig. 7C, #6b right side) at a second end opposite the first end; wherein the surface mount contacts of the clip holder define a plane which is substantially parallel (see Fig. 7A) to the circuit board (Fig. 7A, #1) when that clip holder mounts to the surface mount pads of the circuit board, and wherein the

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surface mount contacts of the clip holder further define apertures which are substantially perpendicular to the plane; wherein the clip holder further comprises: a non-conductive (Col. 5, line 10) body portion (Fig. 7C, #6a) interconnected between the first and second surface mount contacts of the clip holder, the non-conductive body portion defining a surface (Fig. 7C, #6a top) to interface with automated pick and place equipment; and wherein the non-conductive body portion of the clip holder defines a cavity (Fig. 7C, #6c) for fastening with the clip, the cavity extending in a direction that is substantially parallel (see Fig. 7C) to the plane. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify heat sink clip of Prince et al. in view of Smithers with that of Kawabe to insulate the heat sink clip from the first and second surface mount areas. Fukui teaches surface mount contacts (Fig. 1, #2) of the clip holder further define apertures (Fig. 1, #6) which are substantially perpendicular (see Fig. 1) to the plane. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify heat sink clip of Prince et al. in view of Smithers with that of Fukui to incorporate apertures in the clip holders to improve solderability.

With respect to Claims 25 and 27, Prince et al. in view of Smithers and further in view of Fukui fail to teach an interconnecting conductive portion with the non-conductive body. Kawabe teaches in another embodiment that each clip holder further includes: an interconnecting conductive portion (Fig. 3, #6d) which electrically interconnects the first and second surface mount contacts of that clip holder, and wherein part of the interconnecting conductive portion is exposed (see Fig. 3) within the cavity defined by

the non-conductive body portion of that clip holder. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the method of Prince et al. in view of Smithers further in view of Fukui and further in view of Kawabe to provide an electrically conductive path within the body cavity to ground the heat sink to the printed circuit board to minimize EMI.

### ***Response to Arguments***

8. Applicant's arguments filed 3/27/06 have been fully considered but they are not persuasive. The clip of Smithers can be used to fasten any heat sink including the heat sink of Prince to a circuit board. The heat of Prince can be configured to permit the clip of Smithers to fasten into the clip holders of Prince. Alternately, the heat sink of Prince is manufactured using a flat wire spring which combines the applicant's separate claimed elements of the heat sink and the clip.

9. The indicated allowability of claims 7-8 are withdrawn in view of the newly discovered reference(s). Rejections based on the newly cited reference(s) are above.

### ***Conclusion***


10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kiyose (US 4,991,059), Kogure et al. (US 5,148,349), Torigian et al. (US 6,623,283) and Downes (US 6,552,277) teach using holes, channels and grooves, respectively, to improve a solder joint.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert J. Hoffberg whose telephone number is (571) 272-2761. The examiner can normally be reached on 8:30 AM - 4:30 PM Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RJH

  
LYNN FEILD  
SUPERVISORY PATENT EXAMINER